```
=> d his full

     FILE 'REGISTRY' ENTERED AT 17:36:39 ON 10 APR 2003
                E S GRISEUS TRYPSIN/CN
                E STREPTOMYCES GRISEUS TRYPSIN/CN
                E PRONASE/CN
L1 .          1 SEA ABB=ON  PRONASE/CN
                E TRYPSIN/CN
L2            1 SEA ABB=ON  TRYPSIN/CN
                E TRYPSIN (STREPT/CN
L3            1 SEA ABB=ON  "TRYPSIN (STREPTOMYCES GRISEUS)"/CN

     FILE 'HCAPLUS' ENTERED AT 17:40:12 ON 10 APR 2003
L4           64 SEA ABB=ON  L3 OR (S OR ?STREPTOMYCES?)(W)?GRISEUS?(W)?TRYPSIN?
L5         7856 SEA ABB=ON  L1 OR ?PRONASE?
L6           22 SEA ABB=ON  L4 AND L5
L7           13 SEA ABB=ON  L6 AND (?ISOLAT? OR ?PURIF?)
L8           10 SEA ABB=ON  L6 AND (?AMIDIN? OR ?GUANADIN? OR ?AMINE?)
L9           19 SEA ABB=ON  L7 OR L8   19 cits in CA Plus
L10           0 SEA ABB=ON  L9 AND (?PURIT? OR ?PURIF?)(W)95

     FILE 'MEDLINE, BIOSIS, EMBASE, WPIDS, JICST-EPLUS, JAPIO' ENTERED AT
     17:46:03 ON 10 APR 2003
L11          11 SEA ABB=ON  L9
L12           8 DUP REMOV L11 (3 DUPLICATES REMOVED)  8 cits in other databases
```

```
=> d que stat l9
L1             1 SEA FILE=REGISTRY ABB=ON  PRONASE/CN
L3             1 SEA FILE=REGISTRY ABB=ON  "TRYPSIN (STREPTOMYCES GRISEUS)"/CN
L4            64 SEA FILE=HCAPLUS ABB=ON  L3 OR (S OR ?STREPTOMYCES?)(W)?GRISEUS
                 ?(W)?TRYPSIN?
L5          7856 SEA FILE=HCAPLUS ABB=ON  L1 OR ?PRONASE?
L6            22 SEA FILE=HCAPLUS ABB=ON  L4 AND L5
L7            13 SEA FILE=HCAPLUS ABB=ON  L6 AND (?ISOLAT? OR ?PURIF?)
L8            10 SEA FILE=HCAPLUS ABB=ON  L6 AND (?AMIDIN? OR ?GUANADIN? OR
                 ?AMINE?)
L9            19 SEA FILE=HCAPLUS ABB=ON  L7 OR L8


=> d ibib abs l9 1-19

L9   ANSWER 1 OF 19  HCAPLUS  COPYRIGHT 2003 ACS
ACCESSION NUMBER:        1998:643707  HCAPLUS
DOCUMENT NUMBER:         130:34822
TITLE:                   Purification and characterization of
                         Streptomyces griseus trypsin
                         overexpressed in Streptomyces lividans
AUTHOR(S):               Koo, Bon-Joon; Bae, Kwang Hee; Byun, Si-Myong; Hong,
                         Soon-Kwang
CORPORATE SOURCE:        Department of Biological Science, Myong Ji University,
                         Kyonggi-Do, S. Korea
SOURCE:                  Journal of Microbiology and Biotechnology (1998),
                         8(4), 333-340
                         CODEN: JOMBES; ISSN: 1017-7825
PUBLISHER:               Korean Society for Applied Microbiology
DOCUMENT TYPE:           Journal
LANGUAGE:                English
AB   Streptomyces griseus trypsin (SGT) is an
     extracellular proteinase produced by S. griseus.  The sprT gene, which
     encodes premature SGT protein, was cloned into the plasmid pWHM3, a
     Streptomyces-E. coli shuttle vector.  When the recombinant plasmid was
     introduced into Streptomyces lividans TK24, two proteins with mol. wts. of
     28 kDa and 42 kDa were detected.  The 28-kDa protein was a SGT protein
     while the larger 42-kDa protein is thought to have been a premature form
     of the SGT protein.  The SGT protein was purified to homogeneity
     via ammonium sulfate fractionation and many column chromatogs., including
     CM-sepharose chromatog., Mono-S chromatog., and Superose-12 chromatog.,
     from the culture broth of S. lividans TK24 harboring the sprT gene.  The
     N-terminal amino acid sequence, isoelec. points, and stabilities at
     various conditions of the SGT proteins purified from the
     Pronase and transformant were almost identical.  The amt. of the
     expressed SGT in S. lividans TK 24 was detd. to be 5 times more than that
     of S. griseus based on the enzymic activity against artificial substrate.
REFERENCE COUNT:         31    THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS
                               RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9   ANSWER 2 OF 19  HCAPLUS  COPYRIGHT 2003 ACS
ACCESSION NUMBER:        1988:18250  HCAPLUS
DOCUMENT NUMBER:         108:18250
TITLE:                   High-performance affinity adsorbents for
                         trypsin-family enzymes prepared with TSKgel G3000PW
AUTHOR(S):               Kanamori, Akiko; Seno, Nobuko; Matsumoto, Isamu
CORPORATE SOURCE:        Fac. Sci., Ochanomizu Univ., Tokyo, 112, Japan
SOURCE:                  Chemical & Pharmaceutical Bulletin (1987), 35(9),
```

3777-83
CODEN: CPBTAL; ISSN: 0009-2363
DOCUMENT TYPE: Journal
LANGUAGE: English

AB For affinity HPLC (HPLAC) of trypsin-family enzymes, 2 kinds of adsorbents (I and II) were prepd. by convenient procedures using m-**aminobenzamidine** (ABA) and TSKgel G3000PW, a carrier for HPLC. For adsorbent I, ABA was immobilized on succinyl-TSKgel G3000PW, which was prepd. by successive epoxy activation, amination, and succinylation of TSKgel G3000PW with the aid of N-ethoxycarbonyl-2-ethoxy-1,2-dihydroquinoline (.apprx.16 .mu.mol ABA/g wet gel; .apprx.80% yield). For adsorbent II, ABA was immobilized on a formyl carrier, which was prepd. by successive epoxy activation, hydrolysis, and periodate-oxidn. of TSKgel G3000PW through reductive amination with NaCNBH3 (19 .mu.mol ABA/g wet gel; 98% yield). In the case of HPLAC on adsorbent I, bovine and **Streptomyces griseus trypsins** were eluted at 12 and 19 min, resp., whereas the enzymes were retained on adsorbent II and were recovered efficiently with eluting buffer contg. 6-aminohexanoic acid. Thus, adsorbent I is useful for the rapid anal. of the enzymes and adsorbent II for the prepn. of the enzymes.

L9 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1986:586397 HCAPLUS
DOCUMENT NUMBER: 105:186397
TITLE: Preparation of high-capacity affinity adsorbents using formyl carriers and their use for low- and high-performance liquid affinity chromatography of trypsin-family proteases
AUTHOR(S): Kanamori, Akiko; Seno, Nobuko; Matsumoto, Isamu
CORPORATE SOURCE: Fac. Sci., Ochanomizu Univ., Tokyo, 112, Japan
SOURCE: Journal of Chromatography (1986), 363(2), 231-42
CODEN: JOCRAM; ISSN: 0021-9673
DOCUMENT TYPE: Journal
LANGUAGE: English

AB To prep. stable and high-capacity affinity adsorbents for trypsin-family proteases, high concns. of m-**aminobenzamidine** (ABA) were immobilized by reductive amination with NaCNBH4 on 2 types of formyl carriers, I and II, having different spacer lengths. Formyl carriers I were prepd. by periodate oxidn. of glucose carriers obtained by coupling glucose to epoxy-activated carriers. Formyl carriers II were prepd. by periodate oxidn. of glyceryl carriers obtained by hydrolysis of epoxy-activated carriers. High concns. of ABA (15-21 .mu.mol/g wet gel) were efficiently immobilized on both types of carriers, and formyl groups remaining on the adsorbents were converted into hydroxymethyl groups by redn. with NaBH4. Two types of adsorbents prepd. with Sepharose gel were successfully used for affinity chromatog. of bovine trypsin, **Streptomyces griseus trypsin**, and serine proteases in urine, and exhibited high adsorption capacities, e.g., .apprx.30 mg bovine trypsin/mL gel. Adsorbents prepd. with Toyopearl gel (Fractogel TSK) were also used successfully for HPLC of bovine trypsin, though they exhibited lower adsorption capacities than those prepd. with Sepharose gels.

L9 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1986:454423 HCAPLUS
DOCUMENT NUMBER: 105:54423
TITLE: Intradiscal enzyme therapy: dissolution of proteoglycans or collagen?
AUTHOR(S): Tavakol, K.; Waisman, D. M.; LeBlanc, F. E.; Schachar, N. S.

CORPORATE SOURCE: Fac. Med., Univ. Calgary, Calgary, AB, T2N 4N1, Can.
SOURCE: Current Therapeutic Research (1986), 39(6), 924-32
CODEN: CTCEA9; ISSN: 0011-393X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB To study the mechanism of dissoln. of the insol. portion of herniated nucleus pulposus(NP), the ability and potency of 15 proteases to solubilize the major components of human NP collagen, and proteoglycans (PG) was detd. Following NP proteolysis in vitro and using a math. model, the max. levels of hydroxyproline and **hexosamine** release were deted. as markers of collagen and PG dissoln., resp., and the corresponding percentages of NP wt. loss were detd. as indicators of NP dissoln. Proteinase-K [39450-01-6], protease [9001-92-7] from Bacillus subtilis and **Streptomyces griseus, trypsin** [9002-07-7], **pronase** [**9036-06-0**], papain [9001-73-4], bacterial collagenase A (COLL) [9001-12-1], and chymopapain (CHYM) [9001-09-6] solubilized both PG and collagen, and resulted in substantial amts. of NP wt. loss, Staphylococcus aureus and Submaxilaris proteases, .alpha.-chymotrypsin [9004-07-3], carboxypeptidase A [11075-17-5] and carboxypeptidase B [9025-24-5], neuraminidase [9001-67-6], and leucine aminopeptidase [9001-61-0] dissolved only PG in small amts., showing low levels of NP wt. loss. The ability of the enzymes to dissolve human NP correlates more with solubilization of PG than collagen, the enzymes that degrade both collagen and PG have greater potency to dissolve NP than those that degrade only PG, and most of the enzymes tested were more potent than CHYM and almost as potent as COLL.

L9 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1985:556271 HCAPLUS
DOCUMENT NUMBER: 103:156271
TITLE: High-performance affinity chromatography of trypsins on Asahipak GS-gel coupled with p-**aminobenzamidine**
AUTHOR(S): Ito, Naofumi; Noguchi, Kohji; Shimura, Kiyohito; Kasai, Kenichi
CORPORATE SOURCE: Technol. Dev. Dep., Asahi Chem. Ind. Co. Ltd., Kawasaki, 210, Japan
SOURCE: Journal of Chromatography (1985), 333(1), 107-14
CODEN: JOCRAM; ISSN: 0021-9673
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An adsorbent for affinity HPLC of trypsins was prepd., based on a micro-particulate polyvinyl alc. gel, Asahipak GS-gel. After the OH groups had been activated with 1,1'-carbonyldiimidazole, 6-aminohexanoic acid was coupled as a spacer; then p-aminobenzamide, a specific ligand for trypsin-family enzymes, was immobilized on the spacer. Fluorometric detection of eluted protein and on-line assay of enzyme activity with a fluorogenic substrate, peptidylmethylcoumaryl amide, made it possible to attain very high sensitivity. Microgram amts. of bovine trypsin and **Streptomyces griseus trypsin** could easily be analyzed in a short time (<1 h).

L9 ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1985:108564 HCAPLUS
DOCUMENT NUMBER: 102:108564
TITLE: Introduction of .omega.-carboxyl spacers onto cross-linked agarose gel beads by O-alkylation for the preparation of affinity adsorbents
AUTHOR(S): Shimura, Kiyohito; Kasai, Kenichi
CORPORATE SOURCE: Fac. Pharm. Sci., Teikyo Univ., Kanagawa, 199-01,

Japan
SOURCE: Journal of Chromatography (1984), 315, 161-6
CODEN: JOCRAM; ISSN: 0021-9673
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Crosslinked agarose gel beads (Sepharose CL-4B) were O-alkylated with chloroacetylglycylglycine or N-chloroacetyl-6-aminohexanoic acid in DMSO using methylsulfinyl carbanion as a catalyst. The reaction was completed within 30 min, and the degree of substitution reached 100 .mu.mol/mL settled vol. of the gel with .apprx.50% yield. The terminal CO2H group of the spacers can be coupled with an affinity ligand contg. an NH2 function using water-sol. carbodiimide. The ligand-matrix linkage is stable and free from undesired elec. charge. **Streptomyces griseus Trypsin** was **purified** to homogeneity from **Pronase** using a column of the Sepharose deriv. coupled with p-**aminobenzamidine**.

L9 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1985:41904 HCAPLUS
DOCUMENT NUMBER: 102:41904
TITLE: Affinophoresis of trypsins with an anionic affinophore
AUTHOR(S): Shimura, Kiyohito; Kasai, Kenichi
CORPORATE SOURCE: Fac. Pharm. Sci., Teikyo Univ., Kanagawa, 199-01, Japan
SOURCE: Biochimica et Biophysica Acta (1984), 802(1), 135-40
CODEN: BBACAQ; ISSN: 0006-3002
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An anionic affinophore for trypsin affinophoresis (Shimura, K.; Kasai, K., 1982) was synthesized. p-**Aminobenzamidine**, a competitive inhibitor of trypsin, was coupled to one-fifth of the carboxyl groups of polyacrylyl-.beta.-alanyl-.beta.-alanine by the use of water-sol. carbodiimide and the residual carboxyls were converted to sulfonate groups by coupling with aminomethanesulfonic acid. Affinophoresis was carried out in 1% agarose gel plates, and the protein bands were detected with Coomassie brilliant blue R250. Enhanced migrations of bovine and **Streptomyces griseus trypsins** towards the anode were obsd. with the anionic affinophore. The migrations of inactive forms prepd. by active site modifications were scarcely affected. However, the affinophore was not effective for S. erythreus trypsin, an anionic trypsin, probably because of ionic repulsion between the anionic mols. **S. griseus Trypsin** was sepd. from **Pronase** by affinophoresis.

L9 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1983:211944 HCAPLUS
DOCUMENT NUMBER: 98:211944
TITLE: Light sensitization of a microbial protease
AUTHOR(S): Kuan, Kenneth N.; Lee, Y. Y.; Melius, Paul
CORPORATE SOURCE: Dep. Chem. Eng., Auburn Univ., Auburn, AL, 36849, USA
SOURCE: Journal of Applied Biochemistry (1982), 4(4), 384-90
CODEN: JABIDV; ISSN: 0161-7354
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A trypsin-like enzyme from a com. prepn. of Streptomyces griseus **Pronase** was **purified** by successive affinity chromatog. on carbobenzoxy-L-phenylalanyl-triethylenetetraminyl-Sepharose and CM-cellulose 52 ion exchanger. This microbial enzyme possessed a unique characteristic in that it could be artificially light-sensitized by acylation with cis-cinnamoylimidazole.

L9 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1983:49288 HCAPLUS
DOCUMENT NUMBER: 98:49288
TITLE: Affinophoresis of trypsins
AUTHOR(S): Shimura, Kiyohito; Kasai, Kenichi
CORPORATE SOURCE: Fac. Pharm. Sci., Teikyo Univ., Sagamiko, 199-01, Japan
SOURCE: Journal of Biochemistry (Tokyo, Japan) (1982), 92(5), 1615-22
CODEN: JOBIAO; ISSN: 0021-924X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new sepn. technique for proteins, named affinophoresis, which is based on its specific affinity and utilizes electrophoresis, was devised. This technique requires a carrier macromol., affinophore, which contains both an affinity ligand for a certain protein and many charges, either pos. or neg., in order to migrate rapidly in an elec. field. When a mixt. of proteins is electrophoresed in the presence of the affinophore, the protein having an affinity with the ligand will form a complex with the affinophore. This results in a change in the apparent electrophoretic mobility. If the protein mobility is sufficiently accelerated, it can be sepd. from other materials. A cationic affinophore for trypsin was prepd. Sol. dextran (mol. wt. .apprx.10,000) was coupled with a DEAE group and m-**aminobenzamidine**, a competitive inhibitor of trypsin. Electrophoresis of trypsins from several sources on agarose gel plates in the presence of the affinophore showed that affinophoresis actually occurred. The electrophoretic mobilities of the trypsin mols. increased towards the cathode, the same direction as the affinophore movement. The presence of leupeptin and treatment of the trypsins with TLCK suppressed the effect of the affinophore. **Streptomyces griseus Trypsin**, contained in **Pronase**, was easily sepd. and detected. This procedure is distinct from affinity chromatog. and so-called affinity electrophoresis in that the support of the affinity ligand moves, and has advantages esp. for anal. purposes: e.g., the detection of specific mols., regardless of their isoelec. points.

L9 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1981:152455 HCAPLUS
DOCUMENT NUMBER: 94:152455
TITLE: Rapid **purification** of **Streptomyces griseus trypsin** by immobilized rice bran trypsin inhibitor
AUTHOR(S): Tashiro, Misao; Sugihara, Nobuo; Maki, Zensuke; Kanamori, Masao
CORPORATE SOURCE: Fac. Living Sci., Kyoto Prefect. Univ., Kyoto, 606, Japan
SOURCE: Agricultural and Biological Chemistry (1981), 45(2), 519-21
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The trypsin activity of S. griseus **Pronase**-P was **purified** to homogeneity on an affinity column of rice bran trypsin inhibitor immobilized on CNBr-activated Sepharose 4B. The enzyme was eluted at acidic pH and showed only 1 component on SDS-gel electrophoresis. **Purified** trypsin had a relatively high sp. activity for trypsin substrates and no exopeptidase activity. The preparative method was rapid and highly efficient.

L9 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1976:401636 HCAPLUS
DOCUMENT NUMBER: 85:1636
TITLE: Affinity chromatography of trypsin and related enzymes. III. **Purification** of **Streptomyces griseus trypsin** using an affinity adsorbent containing a tryptic digest of **protamine** as a ligand
AUTHOR(S): Yokosawa, Hideyoshi; Hanba, Takayoshi; Ishii, Shinichi
CORPORATE SOURCE: Fac. Pharm. Sci., Hokkaido Univ., Sapporo, Japan
SOURCE: Journal of Biochemistry (Tokyo, Japan) (1976), 79(4), 757-63
CODEN: JOBIAO; ISSN: 0021-924X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new, simple method was developed for the **purifn.** of **S . griseus trypsin** (EC 3.4.21.4) from **Pronase** . Only a single operation of affinity chromatog. on an agarose deriv., which was easily prepd. by coupling a tryptic digest of salmine to CNBr-activated Sepharose 4B, was required. A high degree of homogeneity was demonstrated for the **purified** enzyme by disc electrophoresis, Na dodecyl sulfate-polyacrylamide gel electrophoresis, and gel filtration, as well as by active site titrn. The behavior of a carboxypeptidase B (EC 3.4.12.3)-like enzyme present in **Pronase** is also discussed.

L9 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1975:403308 HCAPLUS
DOCUMENT NUMBER: 83:3308
TITLE: Enzymic and physicochemical properties of **Streptomyces griseus trypsin**
AUTHOR(S): Olafson, Robert W.; Smillie, Lawrence B.
CORPORATE SOURCE: Dep. Biochem., Univ. Alberta, Edmonton, AB, Can.
SOURCE: Biochemistry (1975), 14(6), 1161-7
CODEN: BICHAW; ISSN: 0006-2960
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Streptomyces griseus trypsin** was **isolated** from **Pronase** by ion-exchange chromatog. on CM-Sephadex and SE-Sephadex. The **isolated** enzyme was homonogeneous by the criteria except for a low degree of contamination by an enzyme with nontryptic activity. The latter could be partially resolved by chromatog. on Bio-Rex 70. The molar absorbancy at 280 nm was 3.96 .times. 10-6M-1/cm and the E1cm1% was 17.3. The mol. wt. was 22,800 .+-. 800. The enzyme was stable at 0.degree. from pH 2 to 10. At 30.degree. the enzyme was maximally stable at pH 3-4 and significantly stabilized in the neutral and alk. range by 15mM Ca2+. Some evidence was obtained for a reversible denaturation of the enzyme at pH 12.0 and 2.0. The Km for N-.alpha.-benzoyl-L-arginine Et ester at pH 8.0 in 20mM CaCl2-0.1M KCl-10mM Tris-HCl buffer at 30.degree. was 7.7 .+-. 1.9 .times. 106M and the esterase activity was dependent on an ionizing group with pKa = 5.85. In 2H2O this pKa was increased to 6.35 and the rate of hydrolysis decreased 3-fold. The rate of hydrolysis was independent of pH between 8 and 10. The inhibition of the enzyme with L-1-chloro-3-tosylamido-4-phenyl-2-butanone was assocd. with the alkylation of its single histidine residue. This residue is present in a homologous amino acid sequence as the active-site histidine in trypsin and chymotrypsin. ORD and CD measurements over the pH range 5.3-10.5 indicated no significant conformational change until the pH was increased >10.1. The observation that, under the conditions tested, acetylation and carbamylation of the

N-terminal valine were incomplete is consistent with the view that this group is buried as an ion pair and only becomes available for deprotonation and reaction upon denaturation of the enzyme at pH values >10.0.

L9 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1974:487173 HCAPLUS
DOCUMENT NUMBER: 81:87173
TITLE: Amino acid sequence of **Streptomyces griseus trypsin**. II. Tryptic peptides
AUTHOR(S): Jurasek, L.; Smillie, L. B.
CORPORATE SOURCE: Dep. Biochem., Univ. Alberta, Edmonton, AB, Can.
SOURCE: Canadian Journal of Biochemistry (1974), 52(5), 382-92
CODEN: CJBIAE; ISSN: 0008-4018
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **S. griseus trypsin** (S.G.T.) **isolated** from **Pronase** was reduced, aminoethylated, and digested with trypsin. The sol. peptides were recovered and the insol. residue redigested with chymotrypsin. Following recovery of the sol. fraction, the insol. portion was in turn digested with.alpha.-lytic protease of Myxobacter 495. The 3 groups of sol. peptides were sep. subjected to ion-exchange chromatog. on the Technicon peptide analyzer and to final **purifn.** by high-voltage paper electrophoresis. Sequence anal. by the dansyl-Edman procedure provided unique sequences from the sol. tryptic peptides accounting for 65% of the S.G.T. mol. Peptides obtained from the redigests of the insol. residues accounted for an addnl. 20%. Tryptic digestion of dansylated S.G.T. yielded a unique .alpha.-NH2 dansylated peptide whose compn. showed it to be the same as the NH2-terminal sequence previously postulated for this enzyme. The tryptic peptides provided overlaps for many of the previously sequenced peptic peptides. Three continuous sequences of 49, 36, and 28 residues were elucidated. Evidence was also obtained that the NH2-terminal valine residue was, to a limited extent, aminoethylated during reaction of thereduced protein with ethylenimine.

L9 ANSWER 14 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1973:533883 HCAPLUS
DOCUMENT NUMBER: 79:133883
TITLE: Proteolytic enzymes of the K1 strain of Streptomyces griseus obtained from a commercial preparation (**Pronase**). **Purification** and characterization of the aminopeptidases
AUTHOR(S): Vosbeck, Klaus D.; Chow, Kai-Fu; Awad, William M., Jr.
CORPORATE SOURCE: Sch. Med., Univ. Miami, Miami, FL, USA
SOURCE: Journal of Biological Chemistry (1973), 248(17), 6029-34
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An affinity matrix, 1,6-diaminohexane-agarose, was synthesized and demonstrated to bind **S. griseus trypsin**. This agarose deriv. also bound the 2 components with aminopeptidase activity present in **Pronase**. The trypsin was completely sepd. from the aminopeptidases by initial passage through a CM-cellulose column. Thereafter, the trypsin was selectively retarded by the **hexanediamine**-agarose; all assocd. components were eluted with 1M NaCl at pH 8, whereas the trypsin could be eluted only after application of an acidic (pH 3) buffer. This enzyme appeared to be homogeneous by

other studies. Bovine trypsin was not retarded by this chromatog. procedure. The aminopeptidases were **purified** by passage through the same column. Their complete selective retardation was achieved only after prior treatment with Na **ethylenediaminetetraacetate**. Ca2+ at low concns. eluted the 2 enzymes sep. Ca2+ was required for the activity of each enzyme and also stabilized each enzyme against heat denaturation. Sr2+ restored about 2/3 of the activities to the metal-free proteins as compared to the activities noted with Ca2+; other divalent cations provided much less activity. The max. activity of each aminopeptidase was between pH values of 7.5 and 10; each enzyme was stable between pH values of 6 and 11. These enzymes were tentatively designated aminopeptidase 1 and aminopeptidase 2 after the order of their elution from **hexanediamine**-agarose; gel filtration revealed their approx. mol. wts. to be 23,000 and 25,000, resp. A single band was seen for each protein after acrylamide gel electrophoresis.

L9 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1973:475429 HCAPLUS
DOCUMENT NUMBER: 79:75429
TITLE: Amino acid sequence of **Streptomyces griseus trypsin**. I. Peptic peptides
AUTHOR(S): Jurasek, L.; Smillie, L. B.
CORPORATE SOURCE: Dep. Biochem., Univ. Alberta, Edmonton, AB, Can.
SOURCE: Canadian Journal of Biochemistry (1973), 51(7), 1077-88
CODEN: CJBIAE; ISSN: 0008-4018
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Trypsin of S. griseus **isolated** from **Pronase** was digested with pepsin. The peptic peptides were **isolated** by high-voltage electrophoresis on paper and ion-exchange chromatog. Anal. of the **purified** peptides provided 28 unique amino acid sequences accounting for .apprx.95% of the trypsin mol. A portion of the residues not accounted for were ascribed to free leucine, phenylalanine, tryrosine, and tryptophan present in the peptic digest. The N-terminal sequence of trypsin was Val-Val-Gly-Gly-Thr-Arg-Ala-Ala-Gln-Gly-Glu-Phe and was highly homologous with N-terminal sequences of other Asp-Ser-Gly serine proteases.

L9 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1973:54830 HCAPLUS
DOCUMENT NUMBER: 78:54830
TITLE: Antibody and inhibitor interactions with **pronase** trypsin
AUTHOR(S): Trop, M.; Pinsky, A.; Avtalion, R.
CORPORATE SOURCE: Dep. Life Sci., Bar-Ilan Univ., Ramat-Gan, Israel
SOURCE: Immunology (1972), 22(4), 531-5
CODEN: IMMUAM; ISSN: 0019-2805
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Antibody to **Pronase** trypsin reacts with its antigenic sites to the same extent whether the enzyme is a sol. complex with its inhibitor or is free. The inhibitor reacts poorly with the antibody-bound enzyme. Excess of antibody displaces the insol. inhibitor from its complex with the enzyme. This displacement effect is greater when the inhibitor is bound to agarose by means of CNBr treatment rather than by means of **ethylenediamine** glutaraldehyde. It is assumed, therefore, that there is competition between the antibody and the inhibitor for the plane tangent to the active site of the enzyme, but not for the active site

itself or for its immediate vicinity.

L9 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1972:22505 HCAPLUS
DOCUMENT NUMBER: 76:22505
TITLE: Improved fractionation system for **pronase** on CM-Sephadex
AUTHOR(S): Jurasek, L.; Johnson, P.; Olafson, R. W.; Smillie, L. B.
CORPORATE SOURCE: Dep. Biochem., Univ. Alberta, Edmonton, AB, Can.
SOURCE: Canadian Journal of Biochemistry (1971), 49(11), 1195-201
CODEN: CJBIAE; ISSN: 0008-4018
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An efficient, single-column preparative-scale fractionation of **pronase** on CM-Sephadex using a linear gradient of pyridine-acetate, pH 5.0, has been developed. Under these conditions excellent resolution and minimal autolysis of the component proteolytic enzymes occurs. Only 3 major endopeptidases with caseinolytic activity are found. **Streptomyces griseus trypsin** (S.G.T.) is recovered in adequate purity for amino acid sequence studies. S. griseus protease A and protease B have been shown to correspond to PNPase I and II previously described by Waehlby. Two aminopeptidases and a carboxypeptidase have also been demonstrated. **Pronase** appears to be a less complex mixt. of proteolytic enzymes than had previously been appreciated.

L9 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1970:338 HCAPLUS
DOCUMENT NUMBER: 72:338
TITLE: Remarkable homology about the disulfide bridges of a trypsin-like enzyme from Streptomyces griseus
AUTHOR(S): Jurasek, Lubomir; Fackre, D.; Smillie, Lawrence B.
CORPORATE SOURCE: Univ. Alberta, Edmonton, AB, Can.
SOURCE: Biochemical and Biophysical Research Communications (1969), 37(1), 99-105
CODEN: BBRCA9; ISSN: 0006-291X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A trypsin-like enzyme cleaving only the arginine and lysine bonds of the oxidized chain of insulin has been **isolated** from com. **Pronase**. Amino acid anal. showed only 1 histidine and 6 half-cystine residues and detn. of the sequences about the 3 disulfide bridges showed a remarkable homology with 3 corresponding bridges in bovine pancreatic trypsin.

L9 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2003 ACS
ACCESSION NUMBER: 1969:368 HCAPLUS
DOCUMENT NUMBER: 70:368
TITLE: The trypsinlike enzyme from Streptomyces griseus (**Pronase**)
AUTHOR(S): Trop, Moshe; Birk, Yehudith
CORPORATE SOURCE: Bar-Ilan Univ., Ramat-Gan, Israel
SOURCE: Biochemical Journal (1968), 109(3), 475-6
CODEN: BIJOAK; ISSN: 0264-6021
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Pronase** was fractionated on a CM-cellulose column with pH and concn. gradient of NH4OAc (0.01M, pH 4.6, to 0.2M, pH 6.9). Five

fractions were **isolated** by their activity in hydrolyzing N.alpha.-benzoyl-L-arginine Et ester (I), N-acetyltyrosine Et ester, and casein and the extent of inhibition of activity by trypsin inhibitors. Four fractions had proteolytic activity, but only fraction C hydrolyzed I and was inhibited by trypsin inhibitors. After rechromatog. as before, fraction C was stable in the cold after freeze-drying. It migrated as a single band during electrophoresis at pH 4.5 in polyacrylamide gel, and eluted as a single peak during chromatog. on Sephadex G-25, G-75, and G-100, and on DEAE-cellulose. The complex which the enzyme formed with trypsin inhibitor AA was dissocd., with recovery of both enzyme and inhibitor activities, after paper electrophoresis for 8 hrs. in pyridine-acetate buffer (0.2M, pH 4.9).

```
=> d que stat l12
L1             1 SEA FILE=REGISTRY ABB=ON  PRONASE/CN
L3             1 SEA FILE=REGISTRY ABB=ON  "TRYPSIN (STREPTOMYCES GRISEUS)"/CN
L4            64 SEA FILE=HCAPLUS ABB=ON  L3 OR (S OR ?STREPTOMYCES?)(W)?GRISEUS
                 ?(W)?TRYPSIN?
L5          7856 SEA FILE=HCAPLUS ABB=ON  L1 OR ?PRONASE?
L6            22 SEA FILE=HCAPLUS ABB=ON  L4 AND L5
L7            13 SEA FILE=HCAPLUS ABB=ON  L6 AND (?ISOLAT? OR ?PURIF?)
L8            10 SEA FILE=HCAPLUS ABB=ON  L6 AND (?AMIDIN? OR ?GUANADIN? OR
                 ?AMINE?)
L9            19 SEA FILE=HCAPLUS ABB=ON  L7 OR L8
L11           11 SEA L9
L12            8 DUP REMOV L11 (3 DUPLICATES REMOVED)

=> d ibib abs l12 1-8

L12  ANSWER 1 OF 8  BIOSIS  COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.DUPLICATE 1
ACCESSION NUMBER:   1998:478891  BIOSIS
DOCUMENT NUMBER:    PREV199800478891
TITLE:              Purification and characterization of
                    Streptomyces griseus trypsin
                    overexpressed in Streptomyces lividans.
AUTHOR(S):          Koo, Bon-Joon; Bae, Kwang Hee; Byun, Si-Myong; Hong,
                    Soon-Kwang (1)
CORPORATE SOURCE:   (1) Dep. Biol. Sci., Myong Ju Univ., San 38-2, Nam-Dong,
                    Yongin-City, Kyonggi-Do South Korea
SOURCE:             Journal of Microbiology and Biotechnology, (Aug., 1998)
                    Vol. 8, No. 4, pp. 333-340.
                    ISSN: 1017-7825.
DOCUMENT TYPE:      Article
LANGUAGE:           English
AB   Streptomyces griseus trypsin (SGT) is an
     extracellular proteinase produced by S. griseus. The sprT gene, which
     encodes premature SGT protein, was cloned into the plasmid pWHM3, a
     Streptomyces-E. coli shuttle vector. When the recombinant plasmid was
     introduced into Streptomyces lividans TK24, two proteins with molecular
     weights of 28 kDa and 42 kDa were detected. The 28-kDa protein was a SGT
     protein while the larger 42-kDa protein is thought to have been a
     premature form of the SGT protein. The SGT protein was purified
     to homogeneity via ammonium sulfate fractionation and many column
     chromatographies, including CM-sepharose chromatography, Mono-S
     chromatography, and Superose-12 chromatography, from the culture broth of
     S. lividans TK24 harboring the sprT gene. The N-terminal amino acid
     sequence, isoelectric points, and stabilities at various conditions of the
     SGT proteins purified from the Pronase and
     transformant were almost identical. The amount of the expressed SGT in S.
     lividans TK 24 was determined to be 5 times more than that of S. griseus
     based on the enzymatic activity against artificial substrate.

L12  ANSWER 2 OF 8  BIOSIS  COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER:   1985:302979  BIOSIS
DOCUMENT NUMBER:    BA79:82975
TITLE:              INTRODUCTION OF OMEGA CARBOXYL SPACERS ONTO CROSS-LINKED
                    AGAROSE GEL BEADS BY O ALKYLATION FOR THE PREPARATION OF
                    AFFINITY ADSORBENTS.
AUTHOR(S):          SHIMURA K; KASAI K-I
CORPORATE SOURCE:   DEP. BIOLOGICAL CHEMISTRY, FAC. PHARMACEUTICAL SCI., TEIKYO
                    UNIV., SAGAMIKO, KANAGAWA 199-01, JAPAN.
SOURCE:             J CHROMATOGR, (1984 (RECD 1985)) 315 (0), 161-166.
```

CODEN: JOCRAM. ISSN: 0021-9673.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Cross-linked agarose gel beads (Sepharose CL-4B) were O-alkylated with chloroacetylglycylglycine or N-chloroacetyl-6-aminohexanoic acid in dimethyl sulfoxide by using methylsulfinyl carbanion as a catalyst. The reaction was completed within 30 min and the degree of substitution reached 100 .mu.mol per ml settled volume of the gel with about 50% yield. The terminal carboxyl group of the spacers can be coupled with an affinity ligand containing an amino function by the use of water-soluble carbodiimide. The ligand-matrix linkage was stable and free from undesired electric charge. **Streptomyces griseus trypsin** was **purified** to homogeneity from **pronase** by using a column of the Sepharose derivative coupled with p-**aminobenzamidine** .

L12 ANSWER 3 OF 8 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1985:277930 BIOSIS
DOCUMENT NUMBER: BA79:57926
TITLE: AFFINOPHORESIS OF TRYPSINS WITH AN ANIONIC AFFINOPHORE.
AUTHOR(S): SHIMURA K; KASAI K-I
CORPORATE SOURCE: DEP. BIOL. CHEM., FACULTY PHARMACEUTICAL SCI., TEIKYO UNIV., SAGAMIKO, KANAGAWA 199-01, JAPAN.
SOURCE: BIOCHIM BIOPHYS ACTA, (1984) 802 (1), 135-140.
CODEN: BBACAQ. ISSN: 0006-3002.
FILE SEGMENT: BA; OLD
LANGUAGE: English
AB Affinophoresis (Shimura, et Kasai, 1982) is a newly devised electrophoretic separation technique for biomolecules, using an affinophore. The affinophore is a macromolecular polyelectrolyte bearing affinity ligands. It migrates rapidly in an electric field, and molecules which have affinity for the ligand are carried with it and separated from other molecules. An anionic affinophore for trypsin was synthesized. p-**Aminobenzamidine**, a competitive inhibitor of trypsin, was coupled to 1/5 of the carboxyl groups of polyacrylyl-.beta.-alanyl-.beta.-alanine by the use of water-soluble carbodiimide and the residual carboxyls were converted to sulfonate groups by coupling with aminomethanesulfonic acid. Affinophoresis was carried out in 1% agarose gel plates, and the protein bands were detected with Coomassie brilliant blue R250. Enhanced migrations of bovine and **Streptomyces griseus trypsins** towards the anode were observed with the anionic affinophore. The migrations of inactive forms prepared by active site modifications were scarcely affected. The affinophore was not effective for S. erythreus trypsin, an anionic trypsin, probably because of ionic repulsion between the anionic molecules. **S. griseus trypsin** was separated from **pronase** and affinophoresis.

L12 ANSWER 4 OF 8 MEDLINE DUPLICATE 2
ACCESSION NUMBER: 83108796 MEDLINE
DOCUMENT NUMBER: 83108796 PubMed ID: 6185472
TITLE: Affinophoresis of trypsins.
AUTHOR: Shimura K; Kasai K
SOURCE: JOURNAL OF BIOCHEMISTRY, (1982 Nov) 92 (5) 1615-22.
Journal code: 0376600. ISSN: 0021-924X.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198303
ENTRY DATE: Entered STN: 19900318

Last Updated on STN: 19900318
Entered Medline: 19830311

AB We devised a new separation technique for the protein, "affinophoresis," which is based on its specific affinity and utilizes electrophoresis. This technique requires a carrier macromolecule, "affinophore," which contains both an affinity ligand for a certain protein and many charges, either positive or negative, in order to migrate rapidly in an electric field. When a mixture of proteins is electrophoresed in the presence of the affinophore, the protein having an affinity with the ligand will form a complex with the affinophore. This results in a change in the apparent electrophoretic mobility. If the protein is sufficiently accelerated, we can separate it from other materials. A cationic affinophore for trypsin was prepared. Soluble dextran MW approximately 10,000) was coupled with a DEAE-group and m-**aminobenzamidine**, a competitive inhibitor of trypsins. Electrophoresis of trypsins from several origins on agarose gel plates in the presence of the affinophore showed that affinophoresis actually occurred. The electrophoretic mobilities of trypsins increased towards the cathode, the same direction as the affinophore movement. The presence of leupeptin and treatment of the trypsins with TLCK suppressed the effect of the affinophore. **Streptomyces griseus trypsin**, contained in **Pronase**, was easily separated and detected. This procedure is distinct from affinity chromatography and so-called affinity electrophoresis in that the support of the affinity ligand moves, and has advantages especially for analytical purposes: for example, the detection of specific molecules regardless of their isoelectric points.

L12 ANSWER 5 OF 8 BIOSIS COPYRIGHT 2003 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1978:167970 BIOSIS
DOCUMENT NUMBER: BA65:54970
TITLE: THE EFFECTS OF PROTEASES ON PROTEINS AND GLYCO PROTEINS OF DICTYOSTELIUM-DISCOIDEUM PLASMA MEMBRANES.
AUTHOR(S): PARISH R W; SCHMIDLIN S; MUELLER U
CORPORATE SOURCE: CYTOL., INST. PLANT BIOL., UNIV. ZUER., 8008 ZUERICH, SWITZ.
SOURCE: EXP CELL RES, (1977 (RECD 1978)) 110 (2), 267-276. CODEN: ECREAL. ISSN: 0014-4827.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB D. discoideum cells were incubated with proteases, the plasma membranes subsequently **isolated** and changes in proteins and glycoproteins **examined** with dodecylsulfate gel electrophoresis. Low papain concentrations gave rise to a protein band which apparently derived from actin. Since actin was the only protein attacked, the results suggest some part of the actin is exposed on the outer surface of the cell. Higher papain concentrations released a substantial portion of actin from the plasma membrane and partially digested some of the glycoproteins. Since the new actin-derived band was not further digested, the glycoproteins may be required to stabilize the actin polymer rather than anchor those actin molecules which are directly associated with the plasma membrane. **Pronase** [Streptomyces griseus] treatment released the 2 myosin heavy chains from the plasma membrane, in particular the higher MW chain. Actin was not affected. Some glycoproteins were digested. Trypsin attacked many of the plasma membrane proteins, and the myosin heavy chains were completely removed. Actin was only moderately affected. However, the glycoproteins were entirely resistant to trypsin. Apparently the myosin heavy chains are attacked either due to their partial exposure on the cell surface or the exposure of proteins which anchor them in the membrane. These anchoring proteins cannot be glycoproteins or actin. Proteins and glycoproteins were largely digested when **isolated** plasma

membranes were incubated with papain and **pronase**. The effects of trypsin on whole cells and **isolated** plasma membranes were similar.

L12 ANSWER 6 OF 8 MEDLINE DUPLICATE 3
ACCESSION NUMBER: 76213113 MEDLINE
DOCUMENT NUMBER: 76213113 PubMed ID: 819428
TITLE: Affinity chromatography of trypsin and related enzymes. III. **Purification** of **Streptomyces griseus trypsin** using an affinity adsorbent containing a tryptic digest of **protamine** as a ligand.
AUTHOR: Yokosawa H; Hanba T; Ishii S
SOURCE: JOURNAL OF BIOCHEMISTRY, (1976 Apr) 79 (4) 757-63. Journal code: 0376600. ISSN: 0021-924X.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197609
ENTRY DATE: Entered STN: 19900313
Last Updated on STN: 19900313
Entered Medline: 19760902

AB A new, simple method has been developed for the **purification** of **Streptomyces griseus trypsin** [EC 3.4.21.4] from **Pronase**. Only a single operation of affinity chromatography on an agarose derivative, which was easily prepared by coupling a tryptic digest of salmine to cyanogen bromide-activated Sepharose 4B, was required. A high degree of homogeneity was demonstrated for the **purified** enzyme by disc electrophoresis, SDS-polyacrylamide gel electrophoresis and gel filtration, as well as by active-site titration. The behavior of a carboxypeptides B [EC 3.4.12.3]-like enzyme present in **Pronase** is also discussed.

L12 ANSWER 7 OF 8 MEDLINE
ACCESSION NUMBER: 75127939 MEDLINE
DOCUMENT NUMBER: 75127939 PubMed ID: 235280
TITLE: Enzymic and physicochemical properties of **Streptomyces griseus trypsin**.
AUTHOR: Olafson R W; Smillie L B
SOURCE: BIOCHEMISTRY, (1975 Mar 25) 14 (6) 1161-7. Journal code: 0370623. ISSN: 0006-2960.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197507
ENTRY DATE: Entered STN: 19900310
Last Updated on STN: 19950206
Entered Medline: 19750707

AB **Streptomyces griseus trypsin** has been **isolated** from **Pronase** by ion-exchange chromatography on CM-Sephadex and SE-Sephadex. The **isolated** enzyme was homogeneous by the criteria tested except for a low degree of contamination by an enzyme with nontryptic activity. The latter could be partially resolved by chromatography on Bio-Rex 70. The molar absorbancy at 280 nm was found to be 3.96 times 10-4 M-1/cm and the E1cm1% was found to be 17.3. The molecular weight was 22,800 plus or minus 800. The enzyme was found to be stable at 0 degrees from pH 2 to 10. At 30 degrees the enzyme was maximally stable at pH 3-4 and significantly stabilized in the neutral and

alkaline range by 15 mM Ca2+. Some evidence was obtained for a reversible denaturation of the enzyme at pH 12.0 and 2.0. The K-m for N-alpha-benzoyl-L-arginine ethyl ester at pH 8.0 in 20 mM CaCl2-0.1 M KCl-10 mM Tris-HCl buffer at 30 degrees was found to be 7.7 plus or minus 1.9 times 10-6 M and the esterase activity was observed to be dependent on an ionizing group with pK-a equals 5.85. In 2H2O this pKa was increased to 6.35 and the rate of hydrolysis dicreased threefold. The rate of hydrolysis was independent of pH between 8 and 10. The inhibition of the enzyme with L-1-chloro-3-tosylamido-4-phenyl-2-butanone was shown to be associated with the alkylation of its single histidine residue. This residue is present in a homologous amino acid sequence as the active-site histidine in trypsin and chymotrypsin. Optical rotatory dispersion and circular dichroism measurements over the pH range 5.3-10.5 indicated no significant conformational change until the pH was increased above 10.1. The observation that, under the conditions tested, acetylation and carbamylation of the NH2-terminal valine were incomplete is consistent with the view that this group is buried as an ion pair and only becomes available for deprotonation and reaction upon denaturation of the enzyme at pH values greater than 10.0.

L12 ANSWER 8 OF 8 MEDLINE
ACCESSION NUMBER: 73236980 MEDLINE
DOCUMENT NUMBER: 73236980 PubMed ID: 4199084
TITLE: The amino acid sequence of **Streptomyces griseus trypsin**. I. The peptic peptides.
AUTHOR: Jurasek L; Smillie L B
SOURCE: CANADIAN JOURNAL OF BIOCHEMISTRY, (1973 Jul) 51 (7) 1077-88.
Journal code: 0421034. ISSN: 0008-4018.
PUB. COUNTRY: Canada
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197310
ENTRY DATE: Entered STN: 19900310
Last Updated on STN: 19900310
Entered Medline: 19731015